AUTHOR INDEX

Allende, J. E. 403
Auerbach, R. 1
Auerbach, W. 1

Banerjee, A. K. 47
Barik, S. 47
Bhardwaj, R. 195
Black, S. M. 139
Bradley, M. O. 291

Cross, J. C. 329

De, B. P. 47
DeLuca, J. G. 291

Elia, M. C. 291

Fosket, D. E. 217

Goebeler, M. 195
Graham, M. A. 275

Hastie, S. B. 377
Himes, R. H. 257

Kerr, D. J. 275
Krueger, W. C. 239

Leaman, D. W. 329
Lemmer, B. 231, 269
Li, L. H. 239

Mackenzie, P. I. 347
Martin, K. F. 421
Meister, A. 155
Miners, J. O. 347
Morejohn, L. C. 217

Olate, J. 403

Parker, P. J. 71
Polakowski, I. 1

Richardson, A. 97
Riley, R. J. 275
Risau, W. 371
Roberts, R. M. 329

Schulze-Osthoff, K. 195
Sorg, C. 195
Stabel, S. 71
Sunderkötter, C. 195

Taylor, C. W. 97
Thompson, W. J. 13

van Bladeren, P. J. 35
van Ommen, B. 35

Witte, K. 231
Wolf, C. R. 139

AUTHOR INDEX

Allende, J. E. 403
Auerbach, R. 1
Auerbach, W. 1

Banerjee, A. K. 47
Barik, S. 47
Bhardwaj, R. 195
Black, S. M. 139
Bradley, M. O. 291

Cross, J. C. 329

De, B. P. 47
DeLuca, J. G. 291

Elia, M. C. 291

Fosket, D. E. 217

Goebeler, M. 195
Graham, M. A. 275

Hastie, S. B. 377
Himes, R. H. 257

Kerr, D. J. 275
Krueger, W. C. 239

Leaman, D. W. 329
Lemmer, B. 231, 269
Li, L. H. 239

Mackenzie, P. I. 347
Martin, K. F. 421
Meister, A. 155
Miners, J. O. 347
Morejohn, L. C. 217

Olate, J. 403

Parker, P. J. 71
Polakowski, I. 1

Richardson, A. 97
Riley, R. J. 275
Risau, W. 371
Roberts, R. M. 329

Schulze-Osthoff, K. 195
Sorg, C. 195
Stabel, S. 71
Sunderkötter, C. 195

Taylor, C. W. 97
Thompson, W. J. 13

van Bladeren, P. J. 35
van Ommen, B. 35

Witte, K. 231
Wolf, C. R. 139

SUBJECT INDEX

N-Acetylcysteine, effect on glutathione levels 180
N-Acetyltransferase, role in carcinogenesis 279
Actin, paramyxovirus gene expression 61
Adenosine-3′,5′-monophosphate
  circadian rhythms 231, 233
  cyclic nucleotide phosphodiesterases 16
  regulation of $Ins(1,4,5)P_3$ receptor 120
Adenosine-3′,5′-monophosphate-specific phosphodiesterase, inhibitors 26
Ca^{2+}-Adenosine triphosphatase, Ca^{2+} uptake into $Ins(1,4,5)P_3$-sensitive stores 117
Adenosine triphosphate, effect on $Ins(1,4,5)P_3$ receptor 124
Adenylate cyclase, circadian rhythms 231, 233, 234
Adibendan, PDE III inhibition 24
β-Adrenoceptor, circadian rhythms 232
β-Adrenoceptor blocking drugs, chronopharmacodynamics 270
Adriamycin, effect of glutathione on tumor sensitivity 179
Age
  adenylate cyclase, circadian rhythms 236
  drug glucuronidation 352
Amiprophos-methyl, interaction with plant tubulin 225
Amrinone, PDE III inhibition 24
Angiogenesis 1–11
  in vitro assays 6
  in vivo tests 2
  tumors, macrophages 197
Angiogenesis factors
  embryonic 373
  in situ detection 206
  macrophage-derived 198–207
  specific endothelial mitogens 373
Angiotensin converting enzyme, angiogenesis 202
Angiotropin 200
Anthelminthic drugs, tubulin interaction 378, 394
Anthracycline analogs 283
Anthrapyrazoles, metabolism 284
Anticonvulsants, effect on drug glucuronidation 356
Anti-microtubule compounds, plant cells 217–230
Antioxidant responsive elements 147
Antipyrine, metabolism in cancer patients 280
Arrestin 413
Asymmetric Field Inversion Gel Electrophoresis 315

Bemorandan, PDE III inhibition 24
Benzimidazole carbamates, tubulin interaction 378, 394
Benzotriazine-di-*N*-oxides, metabolism 286
Bilirubin, glutathione *S*-transferase inhibition 41
Bilirubin UDP-glucuronosyltransferase, in human liver 351, 352, 360
Blood island induction 371
Blood pressure, daily variation in response to drugs 269–274
Blood vessel development 372
  assays for 1–11
Breast cancer, effect of menogaril 252
Butamiphos 224
Buthionine sulfoximine
  glutathione depletion 162, 165
    reversal by glutathione esters 167, 183
  induced cataracts 170
  tumor sensitization to chemotherapy and radiation 176

Cadmium, toxicity prevented by glutathione esters 183
Caenorhabditis elegans, protein kinase C 81
Calciosomes 117
Calcium
  communication between stores 119
  $Ins(1,4,5)P_3$ effects on intracellular stores 98, 99, 104
  $Ins(1,4,5)P_3$ receptor and complex signals 125
  $Ins(1,4,5)P_3$ receptor regulation 121
  $Ins(1,4,5)P_3$-sensitive stores 115
  $Ins(1,3,4,5)P_4$ effects on intracellular stores 101
  mobilization 99–106, 111
  protein kinase C dependence 82
Calcium/calmodulin-activatable cyclic nucleotide phosphodiesterase, inhibitors 22
Calcium channels, $Ins(1,4,5)P_3$-gated 100, 103
Calcium channel blockers, daily variation in cardiovascular response 273
Calreticulin 117
Cancer
  drug glucuronidation 356
  effect on drug metabolism 280
  glutathione-dependent enzymes and drug resistance 142, 279
Capillaries, formation *in vitro* 7
Carcinogenesis, drug metabolism 276
Cardiovascular system, daily variation in response to drugs 269–274
Cataracts, buthionine sulfoximine-induced 170
Catharanthus alkaloids, interaction with tubulin and microtubules 257–267
Cell proliferation, angiogenesis factors 7
CGS 9343B, PDE I inhibition 22
Chemokinesis, assay for angiogenesis 6
Chemotaxis, assay for angiogenesis 7
Chemotherapy 275
  cellular levels of glutathione 178
  drug interactions 280
  drug metabolism 282
  glutathione *S*-transferase and drug resistance 140, 142, 279
  sensitization with buthionine sulfoximine 176
n-Chimaerin 79
Chloramphenicol, glucuronidation in neonates 353, 353
Chlorophenoxyacetic acid derivatives, glutathione *S*-transferase inhibition 40

Chorioallantoic membrane
assay for angiogenesis 4
vascularization 198
Chromatin
DNA double strand breaks 295, 319
nogalamycin interaction 249
Chronopharmacology 269–274
Cigarette smoking, effect on drug glucuronidation 354
Cilostamide, PDE III inhibition 24
Cilostazol, PDE III inhibition 24
Cimetidine, effect on cyclophosphamide toxicity 281
Circadian rhythms
cardiovascular system and response to drugs 269–274
5-HT system 421–429
second messenger mechanisms 231–237
Cirrhosis, drug glucuronidation 355
Cisplatin, toxicity prevented by glutathione esters 184
c-Jun protein 88
Clotting system, macrophages and angiogenesis 203
Codeine, glucuronidation 354, 359
Colchicine 377
binding to tubulin 221, 378
electronic spectra of complex 391
kinetics 388
location of binding site 394
thermodynamics 386
structure–activity relationships of analogs 379
effect on tubulin structure 386
Combrestatin, binding to tubulin 382
Conigerine 385
Contour Clamped Homogeneous Electric Field gel electrophoresis 312, 314
Cornea, angiogenesis 3, 207
Corpus luteum, maintenance of 330
c-Raf kinase 79, 88
Crigler–Najjar syndrome, drug glucuronidation 360
Cyclic nucleotide phosphodiesterases 13
biochemistry 15
circadian rhythms 233
cDNA cloning and protein sequencing 17
domain structures 14
inhibitors 21
PDE I 22
PDE II 23
PDE III 24
PDE IV 26
PDE V 26
isoenzymes 14
nomenclature 14
Cyclic nucleotides, regulation of $Ins(1,4,5)P_3$ receptor 120
Cyclophosphamide
effect of cimetidine on toxicity 281
metabolism and bioactivation 282
Cysteine
glutathione synthesis 179
therapy based on increase in cellular glutathione 180
toxicity 179
Cytochrome P450
association with cancer risk 278, 281
metabolism of anticancer drugs 282
Cytokines, effect on extracellular matrix 202
Cytoprotection, glutathione *S*-transferase 143
Cytoskeletal proteins, viral gene expression 61

Decavanadate, effect on $Ins(1,4,5)P_3$ receptor 103
Denbufylline, PDE IV inhibition 26
Development
angiogenesis factors 373
drug glucuronidation 352
Diacylglycerol
protein kinase C activation 83
sources of 84
Diacylglycerol kinase 79
2,5-Di(*tert*-butyl)-1,4-benzohydroquinone, effect on Ca^{2+} uptake 118
2,5-Dichlorophenoxyacetate, glutathione *S*-transferase inhibition 40
Diet, effect on drug glucuronidation 354
Diethylmaleate, glutathione depletion 162
Dihydroalprenolol, circadian variations in binding 232
Dihydroisoquinoline derivatives, PDE I inhibition 22
5,7-Dihydroxytryptamine, effect on circadian rhythm of plasma corticosterone 426
Dinitroaniline herbicides, tubulin interaction 223
Dipyridamole, PDE V inhibition 26
DNA
double strand breaks
analysis techniques 296
cellular toxicity and transformation 292
chemically induced 306
chromatin structure effects 319
induction through cell cycle 317
measurement by neutral filter elution 298
measurement by pulsed field gel electrophoresis 310
measurement of repair 318
radiation induced 292, 303, 317
nogalamycin interaction 243, 246
Doxorubicin
metabolism and bioactivation 283
verapamil interaction 280
Drosophila, protein kinase C 80
Drug glucuronidation in humans 347–369
Drug resistance 139
γ-glutamyl transpeptidase 149
glutathione 140, 175
glutathione peroxidase 148
glutathione reductase 148
glutathione *S*-transferases 43, 140, 279

Elderly, drug glucuronidation 353
Embryonic angiogenesis 2, 8, 373
Embryonic vasculogenesis 371
Endoplasmic reticulum, Ca^{2+} regulators 115
Endothelial cells, assays for angiogenesis 6
Endothelial mitogens 373
Enoximone, PDE III inhibition 24
Estriol UDP-glucuronosyltransferase, in human liver 351
Estrous cycle, effect of trophoblast interferons 336
Ethacrynic acid, glutathione *S*-transferase inhibition 40
Ethnicity, drug glucuronidation 359
Extracellular matrix, role in angiogenesis 198, 202, 206, 208
fibroblast growth factor 199
transforming growth factor-β 205

Fertility, effect of trophoblast interferons 336

Fibrin, macrophages and angiogenesis 203
Fibroblast growth factor
  angiogenesis 198
    disc assay 5
    embryonic 373
  in situ detection 206
  mesoderm induction 372
Field Inversion Gel Electrophoresis 311
f1 protein 87

GAP-43 87
Gender, drug glucuronidation 361
Genetic polymorphism, effect on cytotoxic drug metabolism 281
Gilbert's syndrome, drug glucuronidation 360
Glucuronidation of drugs in man 347, 349
  age 352
  cigarette smoking 354
  diet 354
  disease states 355
  drug therapy 356
  enantioselectivity 348
  ethnicity 359
  genetic factors 360
  hormonal factors 361
  liver UDP-glucuronosyltransferases 350
γ-Glutamyl cycle 157
γ-Glutamylcysteine, protection against anticancer agents 182
γ-Glutamylcysteine synthetase
  inherited deficiency 161
  inhibition of and glutathione depletion 156, 162
γ-Glutamyl transpeptidase
  glutathione metabolism and transport 156, 158
  role in drug resistance 149
Glutathione
  conjugation 158
  deficiency
    experimental production 162
    inborn deficits of synthesis 161
    mitochondrial 164
    reversal by glutathione esters 165
  depletion and tumor therapy 175
  metabolism 157
  role in drug resistance 140, 178
  therapy based on increase of 179
  transport 158, 182
Glutathione analogs, reversible inhibition of glutathione *S*-transferase 39
Glutathione esters
  glutathione delivery 182
  reversal of glutathione deficiency 165
Glutathione peroxidase, role in drug resistance 148
Glutathione reductase, role in drug resistance 148
Glutathione synthase
  inherited deficiency 161
  inhibition by amino acid sulfoximines
Glutathione *S*-transferase 35
  expression in drug resistant mammalian cells 144, 145
  genetic variation in expression 39
  induction 39
  irreversible inhibition 41
  isoenzymes 37
  reversible inhibition 39
  role in drug resistance 140, 279
  therapeutic benefits of inhibition 43
  tissue-selective expression 38
Glyoxalase 156

G proteins 403
  cloning of α subunits 405
  Gα regions implicated in different functions 412
  primary structure of α subunits 409
  primary structure of β and γ subunits 415
  secondary and tertiary structure of α subunit 412
Granulocyte-colony stimulating factor 201
Gray baby syndrome 353
Guanosine-3′,5′-monophosphate
  cyclic nucleotide phosphodiesterases 16, 18
  regulation of $Ins(1,4,5)P_3$ receptor 121
Guanosine-3′,5′-monophosphate-activatable phosphodiesterase, inhibitors 23
Guanosine-3′,5′-monophosphate-inhibitable cAMP phosphodiesterase, inhibitors 24
Guanosine-3′,5′-monophosphate-specific phosphodiesterase, inhibitors 26
Guanosine triphosphatase, activity of G proteins 412
Guanosine triphosphate, communication between Ca^{2+} stores 119
Guanosine triphosphate-tubulin 219

HA-558, PDE I inhibition 22
Hamster cheek pouch, assay for angiogenesis 5
Heart, daily variation in response to drugs 269–274
Hemolytic disease, glutathione deficiency 162
Heparin, effect on $Ins(1,4,5)P_3$ receptor 102
Heparin-binding growth factors, angiogenesis 198, 374
Herbicides, interaction with plant tubulin 223–226
Hereditary hyperbilirubinemias 360
Hormonal factors, drug glucuronidation 361
Human angiogenic factor 200
5-Hydroxyindole acetic acid, circadian rhythms 424
5-Hydroxytryptamine, circadian rhythms 422–427
5-Hydroxytryptamine receptors, circadian rhythms 425
5-Hydroxytryptophan decarboxylase, circadian rhythm 424

ICI 153,110, PDE III inhibition 24
Imazodam, PDE III inhibition 24
Indolidan, PDE III inhibition 24
Inflammatory angiogenesis, macrophages 207, 208
Inflammatory proteins 202
Inhibitor-kB 89
Inositol phosphate analogs, activity at $Ins(1,4,5)P_3$ receptor 102, 106
$Ins(1,4,5)P_3$
  binding sites 106, 108
  Ca^{2+} mobilization 98–106
  channel gating 103
  sensitive Ca^{2+} stores 115
$Ins(1,4,5)P_3$ receptors
  Ca^{2+} mobilization 99
  complex Ca^{2+} signals 125
  desensitization 124
  heterogeneity 110
  molecular cloning 114
  purification 112
  radioligand binding 106
  regulation 120
  structure 113

Ins(1,3,4,5)P_4
  binding sites 109, 113
  Ca^{2+} mobilization 101
Insulin-like growth factor-1
  angiogenesis 200
  in situ detection 207
Interferon-α
  angiogenesis 205
  antiviral and antiproliferative activities 334
  effect on uterus 335
  viral inducibility and expression 339
Interferon, trophoblast
  antiviral and antiproliferative activities 334
  effect on estrous cycle and fertility 336
  expression during development 333
  maternal recognition of pregnancy 330
  effect on uterus 335
  viral inducibility and expression 339
Interleukin-1, angiogenesis 204
Interleukin-6, angiogenesis 201
Iodo-doxorubicin, metabolism 283
4-Ipomeanol, metabolism in lung 284
Isocolchicine 384
Isopropyl *N*-(3-chlorophenyl)-carbamate, interaction with plant tubulin 225
Isosorbide di- and mononitrate, daily variation in cardiovascular response 271

KN-62, PDE I inhibition 22
KW-6, PDE I inhibition 22

Lens, glutathione deficiency 170
Leukemia L1210 cells
  effect of menogaril 249
  effect of nogalamycin derivatives 240, 242, 244
Ligandin 41
Liver disease, drug glucuronidation 355
Lixazinone, PDE III inhibition 24
L protein, vesicular stomatitis virus 52
β-Lumicolchicine 384
Lung, ipomeanol metabolism 284
LY 186125, PDE III inhibition 25

Macrophage-derived growth factor 196
Macrophage inflammatory protein 202
Macrophages
  angiogenic activity 196
  angiogenesis factors 198–207
  extracellular matrix 198, 202
  factors inhibiting angiogenesis 205
  factors with inhibitory and stimulatory effects 203
  secretory activity 196
  subtypes and activation 197
  tumor angiogenesis 197
Magnesium, effect on Ins(1,4,5)P_3 receptor 124
MCI-154, PDE III inhibition 24
Measles virus 61
Melanoma, effect of nogalamycin derivatives 240, 242
Menogaril 245
  antitumor activity 249
  clinical trials and activity 251
  pharmacology 249
  toxicity 251
Mercury, toxicity prevented by glutathione esters 183
Methionine sulfoximine, glutathione depletion 163
4-Methylumbelliferone, glucuronidation by human liver UDPGT 350
Methylxanthines, PDE I inhibition 22
Microtubule-associated proteins 218, 219, 262
Microtubules, animal
  colchicine effects 221, 378
  vinca alkaloid binding 262
  vinca alkaloid-induced paracrystalline structures 265
Microtubules, plant
  colchicine effects 221
  dinitroaniline herbicide interaction 223
  N-phenylcarbamate interaction 225
  phosphoric amide herbicide interaction 224
  structure and composition 217
  taxol-induced polymerization and stabilization 219
Migration inducing factors, angiogenesis 200
Milrinone, PDE III inhibition 24
MIMAX, PDE I inhibition 23
Mitochondria, glutathione synthesis and transport 164, 174
Mitogens, angiogenesis 198, 373
Mitomycin C, metabolism and bioactivation 286
Mitazantrone, metabolism 284
Monocrotaline, toxicity protection by glutathione ester 184
Monocyte-derived endothelial cell inhibitory factor, angiogenesis 205
Morphine UDP glucuronosyltransferase, in human liver 351, 352
Morpholino-doxorubicin, metabolism 284
MRP14 207
Mumps virus 57

Neovascularization 1, 197
  macrophage-derived angiogenesis factors 198
Neurotransmitters, circadian rhythms 421
Neutral filter elution, measurement of DNA double strand breaks 298
Newcastle disease virus 57
NF-kB 88
Nifedipine, daily variation in cardiovascular response 273
Nitrates, daily variation in cardiovascular response 271
(2-Nitro-4-azidophenyl)deacetyl colchicine 395
Nocodazole, binding to tubulin 382, 394
Nogalamycin 239
  antitumor activity 240
  biochemical effects and mechanism of action 243
  cytotoxicity and cell cycle effect 240
  interaction with DNA 243, 246
  structure and chemical preparation of derivatives 240
Non-steroidal anti-inflammatory drugs, glucuronidation 353
N protein, rhabdovirus 55

Oral contraceptive steroids, effect on drug glucuronidation 358
Orthogonal Field Alternation Gel Electrophoresis 312
Oryzalin, tubulin interaction 224, 379
Oxidative stress, glutathione-dependent enzymes 144, 148

5-Oxoprolinase, cysteine delivery 181
5-Oxoprolinuria/5-oxoprolinemia, glutathione synthase deficiency 162
L-2-Oxothiazolidine-4-carboxylate 181
p47 87
p65 79
Paracetamol UDP glucuronosyltransferase, in human liver 351, 352, 354, 356, 360, 361
Paracrystalline structures, vinca alkaloid induced 265
Paramyxoviruses
  morphology and protein composition 57
  replication 63
  structure and organization of genome 58
  transcription 60
P-glycoprotein expression and drug sensitivity 147
Phenobarbitone, effect on drug glucuronidation 356
Phenols, glutathione *S*-transferase inhibition 41
Phenothiazines, PDE I inhibition 22
Phenoxyacetic acid diuretics, glutathione *S*-transferase inhibition 40
N-Phenyl carbamates, interaction with plant tubulin 225
Phenytoin, effect on drug glucuronidation 356
Phorbol ester responsive element 143
Phorbol esters, protein kinase C activation 84
Phorone, induced glutathione depletion 162
Phospholipase A2 79
Phospholipase C 79
Phosphoric amide herbicides, interaction with plant tubulin 225
Pig, expression of trophoblast interferons 337
Pimobendan, PDE III inhibition 24
Placenta, interferons 337
Plants, compounds with anti-microtubule activity 217–230
Plasminogen activator, modulation of extracellular matrix, angiogenesis 202, 203
Platelet-derived endothelial cell growth factor, embryonic angiogenesis 373
Platelet-derived growth factor, angiogenesis 206
Podophyllotoxin, binding to tubulin 379
Polypharmacy 275, 280
  drug glucuronidation 356
P protein
  paramyxoviruses 61
  vesicular stomatitis virus 53
Precolchicine 384
Pregnancy
  drug glucuronidation 361
  maternal recognition, trophoblast interferon 330, 332
Probenecid, effect on drug glucuronidation 358
Propranolol, chronopharmacodynamics 270
Prostaglandins
  angiogenesis 201
  glutathione *S*-transferase in synthesis of 36, 43
  secretion by uterus, effect of trophoblast interferon 335
Protein 80k 85, 86
Protein 87 kDa 86
Protein kinase C 71–95
  Ca^{2+} dependencies 82
  function *in vitro* 81
  function and regulation *in vivo* 84
  homologies to other proteins 78
  in lower eukaryotes 80
  organization of polypeptides 74
  sources of diacylglycerol 84
  substrate specificities 84
  types 72
Protein kinase, cAMP-dependent, regulation of $Ins(1,4,5)P_3$ receptor 121
Pseudosubstrate prototypes, regulation of protein kinase C 75
Pulsed field gel electrophoresis, measurement of DNA double strand breaks 310
Purkinje cells, $Ins(1,4,5)P_3$ receptors 117

Quazinone, PDE III inhibition 24
Quinones, glutathione *S*-transferase inhibition 41

Rabies virus, structure and organization of genome 50
Radiation
  cellular levels of glutathione 178, 185
  induced DNA double strand breaks 292, 303, 317
  sensitization with buthionine sulfoximine 176
ras oncogenes, protein kinase C interaction 88
Respiratory syncytial virus 57
Rhabdoviruses 48
  host factors 56
  morphology and protein composition 49
  replication 55
  structure and organization of genome 49
  transcription 51
Rhythms
  5-HT system 421–429
  second messenger mechanisms 231–237
Rifampicin, effect on drug glucuronidation 358
RNA, nogalamycin interaction 243
RNA polymerase, vesicular stomatitis virus 51
RNA viruses, gene expression 47–70
RO 20–1724, PDE IV inhibition 26
Rolipram, PDE IV inhibition 26
Ryanodine receptor 100, 118

Saccharomyces cerevisiae, protein kinase C 81
Sarcoplasmic reticulum, Ca^{2+} uptake and release 117, 118
Saterinone, PDE III inhibition 24
Seasonal variation, circadian rhythm in cAMP 233
Second messengers, rhythms in 231–237
Sendai virus 61
Serotonergic system, circadian rhythms 421–429
Sex hormones, drug glucuronidation 361
Sheep, trophoblast interferons 329–336
Signal transduction
  circadian rhythms 231–236
  G proteins 404
  protein kinase C 84, 86
Siguazodan, PDE III inhibition 24
SKF 94120, PDE III inhibition 24
Skin, assays for angiogenesis 3
Somatomedin C, angiogenesis 200
SQ 65442, PDE IV inhibition 26
SR 4233, metabolism 286
Steganacin, binding to tubulin 379
Steroids, glutathione *S*-transferase in synthesis of 36
Sulfinpyrazone, effect on drug glucuronidation 358
Sulfoximines, glutathione depletion 162
Sulmazole, PDE III inhibition 24
Suprachiasmatic nuclei 421, 426

Taxol, induced microtubule polymerization and stabilization 219

Teniposide, plasma concentrations and antitumor response 282
Tetrachlorobenzoquinone, glutathione *S*-transferase inhibition 42
Thapsigargin, effect on Ca^{2+} uptake into $Ins(1,4,5)P_3$-sensitive stores 118
Theophylline, phosphodiesterase inhibition 21
Thiazolidines, cysteine delivery 180
TN-16, binding to tubulin 382
Transforming growth factor-α, angiogenesis 199
Transforming growth factor-β, angiogenesis 204
Transverse Alternating Field Electrophoresis 316
Transverse Field Alternation Gel Electrophoresis 311
Trequinsin, phosphodiesterase inhibition 23, 24
2,4,5-Trichlorophenoxyacetate, glutathione *S*-transferase inhibition 40
Trifluralin, tubulin interaction 223
Trophoblast interferon 329
  antiviral and antiproliferative activities 334
  effect on estrous cycle length and fertility 336
  expression during development 333
  maternal recognition of pregnancy 330
  effect on uterus 335
  viral inducibility and expression 339
Trophoblast interferon gene
  distribution in mammals 337
  structure and organization 338
Trophoblast protein-1 331
Tryptophan hydroxylase, circadian rhythms 422
Tubulin, animal
  colchicine binding 378
    electronic spectra of complex 391
    kinetics 388
    location of binding site 394
    structure–activity relationships of analogs 379
    thermodynamics 386
  colchicine effects on structure 386
  effect on rhabdovirus RNA transcription 56
  vinblastine binding 257
  vinblastine-induced aggregation 259
  vinca alkaloid binding 260
Tubulin, plants 217
  colchicine interaction 221
  dinitroaniline herbicide interaction 223
  isolation and polymerization 218
  N-phenyl carbamate interaction 225
  phosphoric amide herbicide interaction 224
Tumor necrosis factor-α
  angiogenesis 203
  in situ detection 207
Tumors
  angiogenesis 3, 4, 197
  drug glucuronidation 356
  glutathione-dependent enzymes and drug resistance 142, 148
  initiation 278

UDP glucuronosyltransferases, in human liver 350
  effect of age 352
  effect of cigarette smoking 354
  effect of diet 354
  effect of disease states 355
  effect of drug therapy 356
  ethnicity 359
  genetic factors 360
  hormonal factors 361
Uterus, effect of trophoblast interferon and interferon-α 335

Vascular endothelial growth factor 201, 374
Vascular permeability factor 201
Vasculogenesis 197, 371
Verapamil, combination chemotherapy 280
Vesicular stomatitis virus
  host factors 56
  structure and organization of genome 49
  transcription 51
Vinblastine
  microtubule binding 262
  tubulin aggregation 259
  tubulin binding 257
Vinca alkaloids 257
  induced paracrystalline structures 265
  microtubule binding 262
  tubulin aggregation 259
  tubulin binding 257, 260
Vincristine, tubulin binding 260
Vindesine, tubulin binding 260
Vinepidine, tubulin binding 260
Vinpocetine, PDE I inhibition 22, 23
Vinrosidine, tubulin binding 261
Viral gene expression 47–70
Viral hepatitis, drug glucuronidation 356

Wound healing, angiogenesis 6

Xenopus, protein kinase C 81
X-ray crystallography, structure of G protein subunits 412

Y-590, PDE III inhibition 24

Zapranist
  PDE I inhibition 23
  PDE V inhibition 26
Zinc fingers, protein kinase C 76